

Jan 4-7:20 AM

Concept	Meaning	Sym- bol	Units	Picture
FREQUENCY	HOW MANY PER UNIT OF TIME $\text{FREQ} = \frac{\#}{\text{TIME}}$	f $f = \frac{1}{T}$	hertz $\text{Hz} = \frac{1}{\text{sec}}$	
PERIOD	HOW MUCH TIME FOR ONE. PERIOD = $\frac{\text{TIME}}{\#}$	T $T = \frac{1}{f}$	Seconds sec.	
TRANSVERSE	WHEN THE MEDIUM VIBRATES <u>ACROSS</u> THE <u>DIRECTION</u> THE WAVE TRAVELS.			
LONGITUDINAL	WHEN THE MEDIUM VIBRATES <u>ALONG</u> THE <u>DIRECTION</u> THE WAVE TRAVELS.			
AMPLITUDE	HOW FAR FROM THE MIDDLE.	A	meters m	
WAVELENGTH	HOW FAR FOR ONE "BACK & FORTH"	λ	meters m	
WAVE SPEED	DISTANCE OF A WAVE TIME OF A WAVE $V = \frac{\lambda}{T}$	V $V = \lambda f$	meters Second m/s	

Feb 18-6:50 AM

Welcome!!!

H. Leslie Grebe

- * Pick up:
 - worksheet
 - slip of paper (for later)



Opening Question:

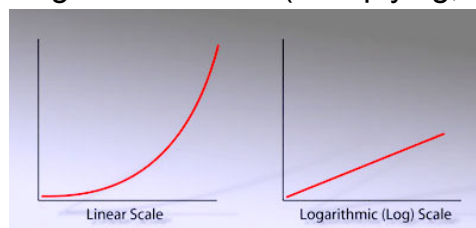
What's a decibel?

How we measure
loudness of sound

Centering

Sep 7-7:04 AM

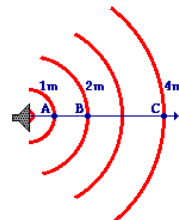
Decibels measure amplitude of sound = loudness = **intensity**
- It's a logarithmic scale (multiplying, not adding)



- Measures how much power your ear is receiving

Distance
1 m
2 m
3 m
4 m

Intensity
160 units
40 units
17.8 units
10 units



- Zero is a reference point: The smallest our ears detect
=> Can have negative dB

THRESHOLD OF HEARING

- <http://phet.colorado.edu/en/simulation/wave-interference>
- <http://www.acoustics.salford.ac.uk/feschools/waves/wavetypes2.htm#decibel>
- <http://www.animations.physics.unsw.edu.au/jw/dB.htm>
- <http://www.physicsclassroom.com/Class/sound/u1112b.cfm>

Feb 27-7:58 AM

1. A mosquito's buzz is often rated with a decibel rating of 40 dB. Normal conversation is often rated at 60 dB. How many times more intense is normal conversation compared to a mosquito's buzz?

- a. 2 b. 20 c. 100 d. 200 e. 400

① $60\text{dB} - 40\text{dB} = 20\text{dB}$
 $\rightarrow 10^2 = 100\times$

(3) $120 - 100 = 20 \text{ dB}$
 $\hookrightarrow 10^2 = 100$

Source	Intensity	Intensity Level	# of Times Greater Than TOH
Threshold of Hearing (TOH)	$1 \times 10^{-12} \text{ W/m}^2$	0 dB	10^0
Rustling Leaves	$1 \times 10^{-11} \text{ W/m}^2$	10 dB	10^1
Whisper	$1 \times 10^{-10} \text{ W/m}^2$	20 dB	10^2
Normal Conversation	$1 \times 10^{-6} \text{ W/m}^2$	60 dB	10^6
Busy Street Traffic	$1 \times 10^{-5} \text{ W/m}^2$	70 dB	10^7
Vacuum Cleaner	$1 \times 10^{-4} \text{ W/m}^2$	80 dB	10^8
Large Orchestra	$6.3 \times 10^{-3} \text{ W/m}^2$	98 dB	$10^{9.8}$
Walkman at Maximum Level	$1 \times 10^{-2} \text{ W/m}^2$	100 dB	10^{10}
Front Rows of Rock Concert	$1 \times 10^{-1} \text{ W/m}^2$	110 dB	10^{11}
Threshold of Pain	$1 \times 10^1 \text{ W/m}^2$	130 dB	10^{13}
Military Jet Takeoff	$1 \times 10^2 \text{ W/m}^2$	140 dB	10^{14}
Instant Perforation of Eardrum	$1 \times 10^4 \text{ W/m}^2$	160 dB	10^{16}

3

Outrageous Acts of Science

A show about viral videos and the science that makes them possible...

"Shredding Speakers" Natural Born Thrillers #4

1. Just watch
2. Read the questions
3. Watch again
4. Discuss
5. Watch a last time to catch anything you might have missed

WATTS
KINETIC ENERGY
dB



Oct 4-7:27 AM

Daily 3 Questions

CP: Sound worksheet due Friday 5/16

- * Every day except test/project days
- * 3 Questions on the topics of the day
- * Main source of daily points
- * I am happy to give credit when I have no concerns about someone giving or getting help with the answers.

You can't get your points if you don't have your **NAME!!!**

Name	Period
1.	
2.	
3.	

Sep 9-7:32 AM

1. Decibels measure _____ of sound

- a) frequency (pitch)
- b) speed
- c) amplitude (loudness)

110dB - 100dB

2. How many times more power is it if I increase by 10 dB?

10x

3. Zero decibels (0 dB) means

- a) no vibration / no sound
- b) the quietest we can hear (threshold of hearing)
- c) the loudest we can stand (threshold of pain)

Apr 25-7:25 AM